

Resist! Hold That Muscle!!

Care must be taken by those with chronic renal insufficiency who need to follow protein-restricted diets to slow the progression of kidney disease. It would be easy for individuals following such diets to lose muscle tissue. However, a 12-week study of 26 volunteers above 50 years of age showed that resistance training—even with protein-restricted diets—increased muscle fiber by 23 percent on average.

Muscle strength increased by 32 percent in those who exercised and decreased by about 13 percent in those who did not. During the study, volunteers who exercised maintained their body weight, but nonexercisers lost about 7.7 pounds.

While these findings have been published in the *Annals of Internal Medicine*, longer term studies with larger groups are needed to answer several important questions. *Carmen Castaneda Sceppa, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, Massachusetts; phone (617) 556-3081, e-mail ccastaneda@hnrc.tufts.edu.*

More to This Crypto Than Meets the Eye

Cryptosporidium is a waterborne, microscopic, single-celled parasite that lives in the intestines of animals and people. It causes a disease called cryptosporidiosis, which is characterized by mild to life-threatening diarrhea. It is spread by oocysts—tiny, tough-walled reproductive capsules excreted in the feces of infected animals.

Until recently, *Cryptosporidium parvum* was thought to be a single species that infects humans and more than 150 different animals. Now a unique species of this pathogen, *C. canis*—which can infect dogs, humans, and cattle—has been identified. Originally thought to be *C. parvum*, this species differs markedly at the molecular level from other known ones.

Thanks to powerful new genetic tools, scientists now see numerous *Cryptosporidium* species where they thought there was only *C. parvum*. Correct species identification can help pinpoint potential sources of *Cryptosporidium* infection. *Ronald Fayer, USDA-ARS Waste Pathogen Laboratory, Beltsville, Maryland; phone (301) 504-8750, e-mail rfayer@anri.barc.usda.gov.*

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Parasitologist Ronald Fayer leads a project to determine sources of *Cryptosporidium* in surface waters and develop techniques for accurate detection of these organisms.

For Bone Health, Elders Need Calcium AND Protein

A 3-year study has shown that—contrary to some evidence—bone mineral density (BMD) may benefit from high-protein diets, at least in older consumers. But the high-protein diet must also meet the recommended dietary allowance for both calcium and vitamin D.

This study looked at 342 men and women older than 65 who did not normally consume high amounts of calcium and whose BMD measurements were average for their age. Half received daily supplements of 500 milligrams of calcium and 700 international units of vitamin D, and half received placebos. At the study's midpoint, the diets of all volunteers were assessed for levels of protein, calcium, vitamin D, and other

nutrients. The mean protein intake for all participants was found to be 79 grams per day.

Six tests administered at 6-month intervals showed that a high-protein diet had favorable effects on bone density in the calcium-supplemented group only. While this suggests a synergy between protein and calcium that mitigates bone loss, more research is needed to confirm the finding. *Bess Dawson-Hughes, Jean Mayer USDA Human Nutrition Research Center on Aging at Tufts University, Boston, Massachusetts; phone (617) 556-3064, e-mail hughesb@hnrc.tufts.edu.*

Wood-Chip Trench Can Staunch Nitrate Flow

Underground tile drains are used on about 30 percent of Midwest farms to speed the draining of excess water from cropland and release it into waterways. But rapid draining allows some nitrate to bypass the soil root zone, where plant roots and other natural processes can remove it.

Concerns about seepage of nitrate from fertilized cropland has prompted researchers to seek low-cost ways to curb such nutrient loss. They've found that deep trenches filled with wood chips can halt nitrate seepage from croplands by as much as 70 percent.

The trenches in the study are 2 feet wide and 6 feet deep. They are laid out 10 feet apart, parallel to—and 2 feet deeper than—underground tile drains. Maintenance free, they're filled to within 1 foot of the soil surface, so as to not be disturbed by cultivation tools. The carbon-based barriers they create help convert the nitrate applied to crops as fertilizer into nitrogen gas, a common atmospheric component. The next phase of study will determine how long the chips will stay effective before decomposing. *Dan B. Jaynes, USDA-ARS Soil and Water Quality Unit, Ames, Iowa; phone (515) 294-823, e-mail jaynes@nsl.gov.*